



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,602	11/28/2003	Kouji Mitsuhashi	246070US2	8264
22850	7590	03/02/2006	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				DHINGRA, RAKESH KUMAR
ART UNIT		PAPER NUMBER		

1763  
DATE MAILED: 03/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/722,602	MITSUHASHI ET AL.
	Examiner Rakesh K. Dhingra	Art Unit 1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 30 December 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 1-8, 16-30 and 34-37 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 9-15 and 31-33 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) 1-37 are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 28 November 2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>09/05</u> . | 6) <input type="checkbox"/> Other: _____.   |

***Election/Restrictions***

Applicant's election with traverse of species 5 (claims 9-15, 31-3) in the reply filed on 12/30/05 is acknowledged. The traversal is on the ground(s) that internal members of species 5 (claims 9-15, 31-33) and species 6 (claims 16-18, 31-33) involve basically same structure. Applicant also argues that claims of the application would be searched in a handful of sub-classes and because of electronic searching, search of all subclasses may be made without substantial effort. This is not found persuasive because species 6 comprises a barrier coat layer of different material that is engineering plastics as against species 5 that comprises barrier coat layer made from ceramic materials like B, Mg, Al etc. and thus the two species would involve separate searches. Similarly other species comprise distinct features like two ceramic layers, hydration of ceramic layers etc thus requiring separate search that would involve serious burden.

The requirement is still deemed proper and is therefore made FINAL.

***Specification***

The disclosure is objected to because of the following informalities:

- 1) Paragraph 0017 – the sentence “In accordance with ----- is executed by using ---“ is incomplete.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12, 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 12, 33 recite limitation “wherein resin is selected from the group consisting of SI (Silicon)”. It is not clear whether the applicant intends to claim “silicon resin” or a resin containing silicon element. For the purpose of examination on merits this limitation has been interpreted as “resin containing silicon element”.

Appropriate clarification is requested.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 9, 10, 15, 31 are rejected under 35 U.S.C. 102(e) as being anticipated by O'Donnell et al (US PGPUB No. 2005/015,0866).**

Regarding Claims 9,10: O'Donnell et al teach an apparatus (Figures 4-6) that includes a focus ring 14 (an internal member of a plasma processing vessel), comprising:  
aluminum (base material); and

a film formed on a surface of the base material, wherein the film has a main layer 100 formed by thermal spraying of yttria-containing coating (ceramic) and an intermediate

coating (barrier coat layer) 80 formed of Al<sub>2</sub>O<sub>3</sub> (ceramic) [Paragraphs 0041, 0054, 0057, 0059, 0062-0066].

Regarding Claim 15: O'Donnell et al teach that main layer is formed of Yttria (Y<sub>2</sub>O<sub>3</sub>) {Paragraph 0041}.

Regarding Claim 31: O'Donnell et al teach that an anodized film can be formed between base material and the coating (film) {Paragraph 0043}.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Donnell et al (US PGPUB No. 2005/015,0866) in view of Fakuda et al (US PGPUB No. 2003/0113479) and George et al (US patent No. 4,357,387).**

Regarding Claim 11: O'Donnell et al teach all limitations of the claim including that intermediate coating (barrier coat layer) is a thermally sprayed film.

O'Donnell et al do not teach that portion of thermally sprayed film is sealed by a resin.

Fakuda et al teach a plasma treatment apparatus (Figure 1) that includes internal members 3a, 3b, 7 that are coated with dielectric layers (thermally sprayed ceramic layers) 4a, 4b, 6. Fakuda et al further teach that a sealing treatment is carried out on top of dielectric layer to reduce the void volume of the dielectric coating [Paragraphs 0067-0080].

O'Donnell in view of Fakuda et al do not teach sealing of barrier coat layer with resin. Further, George et al teach sealing of thermally sprayed refractory (includes ceramic) coating using resins to improve surface abrasion and durability of coatings (Column 2, lines 55-65 and Column 7, lines 10-25).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to seal the barrier coat layer using resin as taught by Fakuda et al and George et al in the apparatus of O'Donnell et al to reduce void volume of barrier coating and improve its surface abrasion and durability.

Regarding Claim 12: George et al teach that sealing resin can be polyimide resin, polyamideimide resin etc (Column 7, lines 40-50).

Regarding Claim 13: Fakuda et al teach that thermally sprayed ceramic layer (barrier coat) is sealed through sol-gel method (Paragraphs 0098, 0099).

**Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Donnell et al (US PGPUB No. 2005/015,0866) in view of Fakuda et al (US PGPUB No.**

**2003/0113479) and George et al (US patent No. 4,357,387) as applied to Claim 13 and further in view of Panitz et al (US Patent No. 5,925,228).**

Regarding Claim 14: O'Donnell et al in view of Fakuda et al and George et al teach all limitations of the claim except that sealing treatment uses a group 3a element.

Panitz et al teach an apparatus (Figures 1, 2A-2C) where a Al<sub>2</sub>O<sub>3</sub> – SiO<sub>2</sub> (Al is an element from group 3a) solution is used for sol-gel sealing treatment of porous coatings on metallic substrates to control pore size and density of ceramic coatings on the substrate (Column 3, line 5 to Column 4, line 40).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use group 3a element for sealing of coating as taught by Panitz et al in the apparatus of O'Donnell et al in view of Fakuda et al and George et al to control pore size and density of ceramic coatings on metal substrates.

**Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Donnell et al (US PGPUB No. 2005/015,0866) in view of Horita et al (US Patent No. 5,892,278).**

Regarding Claim 32: O'Donnell et al teach all limitations of the claim including that anodic oxidized film is sealed, but do not teach sealing by an aqueous solution of metal salt.

Horita et al teach a method (Figures 1, 2) that includes formation of anodic oxidized film on semiconductor chip radiator 1 and where the anodic film is sealed in a nickel salt solution in water (Column 5, line 50 to Column 6, line 10).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to seal the anodic oxidized film by using an aqueous solution of metal salt as taught by Horita et al in the apparatus of O'Donnell et al to enable clog micropores in the anodic oxidized film (Column 5, lines 60-65).

**Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Donnell et al (US PGPUB No. 2005/015,0866) in view of Watanabe et al (US Patent No. 6,073,449).**

Regarding Claim 33: O'Donnell et al teach all limitations of the claim including that anodic oxidized film is sealed, but do not teach sealing by polymer resin (polyimide etc). Watanabe et al teach an apparatus (Figures 11, 12) that includes a base 2 made of aluminum on which an anodized layer 33 is formed, followed by a resin based coating 47. Watanabe et al also teach that resin based coating comprises of polyimide resin, polyimideimide resin etc (Column 11, lines 37-58).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to seal the anodic oxidized film by polyimide resin etc as taught by Watanabe et al in the apparatus of O'Donnell et al to enable clog the micropores in the anodized layer thus providing improved electrical insulation and better adhesion to the subsequent coatings (Column 11, lines 60-65).

#### ***Double Patenting***

Claims 9-14 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 5, 17-22 of copending Application No. 10/773, 245 (Sasaki et al). Although the conflicting claims are not identical, they

Art Unit: 1763

are not patentably distinct from each other because except for claim 9 in the instant application and claims 5, 17 in the copending application, the remaining claims (claims 10-14 in the instant application and claims 18-22 in the copending application) are identical. Claim 5 of copending application recites a "ring member" whereas claim 9 of application recites "an internal member" and thus claim 5 of copending application is narrower and thus anticipates claim 9 of application, which is broader.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to anticipate claims 9-14 of the instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

**Bradley et al (US Patent No. 4,310, 390)** teach sealing of anodic oxidized coatings using organic polymers (Abstract).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1763

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rakesh Dhingra



Parviz Hassanzadeh  
Supervisory Patent  
Examiner Art Unit 1763